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The Development Of Intermodal Transportation In Cirebon

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Abstract **-** The progress of a nation is seen from its transportation conditions". This proverb is familiar to us, but it is difficult to realize. The development of technology and information requires a development in the field of transportation. In the context of human movement and goods, a system that regulates its movement to be effective and efficient from origin to destination safely, comfortably, and timely is needed. The term of intermodaltransportation or combined transport system is directed to achieve the effectiveness and efficiency of the movement.
Cirebon as a gateway of movement from West Java to Central Java or vice versa is rich in transportation modes. Geographically, its location is strategic with the development of transportation requirementfor air, road and rail modes as well as seaand river transportation modes. The potency of this area is very abundant, ranging from the potency of agriculture, plantation, fishery, tourism and other potential areas that are well known both domestically and internationally. Of course, it requires transportation facilities and infrastructures to support the distribution of the produces. Related to it, the local government has made a transportation planning program that is actually very supportive forthe regional and its potencydevelopment that exist. However, it is needed to have synergy and integration between one transportation mode planning with other modes of transportation due to the limited funds available in local government and central government. It is necessary to develop cooperation between the government and the private sector in realizing the development of intermodal transportation in Cirebon.
This paper tries to illustrate the opportunities for the development of intermodal transportation in Cirebon in improving the economy and development of West Java Province, especially Cirebon. The problem discussed here is the long time needed to go to the cities in Central Java (PANTURA track) and also on the existing causeway because of the excessive loads that burden the road, and the condition of damaged roads. In addition, another transportation mode opportunity other than road mode can be an alternative distribution of transportation; thereby it reduces the burden of highway mode. It is expected that the proposed recommendation can be an input for the improvement of transportation system in Cirebon.

Keywords: *Transportation, Intermodal, Cirebon*

1. Preliminary

The transportation sectors (land, sea and air transports) have a vital and strategic dimensioning contribution for national development, given its nature as a driving force and promoter of development activities as well as a gap bridge that makes its role as an integral part of the national development infrastructure more important.

The market share of transportation in Indonesia is currently dominated by roads with 84.13% of passenger transportation and 90.34% of freight transport per year. The share of sea freight is still very low at 1.76% per year for passenger transportation although for freight transport is relatively larger with 7% per year. Ideally, the share of intermodal must be balanced so that theexternality intermodal in the form of high-cost economy due to the jam and road damage can be minimized. Intermodal transportation is the transportation of passengers and/or goods using more than one modes of transportation on a continuous journey.

The network utilization of railway in Cirebon is diverse, but it tends to be low. Cirebon-Prupuk railway track connects Cirebon Station (CN) and Prupuk Station (PPK)

for approximately 75 kilometers. This track is part of the main route connecting the northern railroad track of Java Island (from Cirebon) to the southern railway track (from Kroya). Since 7 April 2015, this track has become a double track rail. It can support the increasing of train traffic frequency. This track is controlled by PT KAI Operation III Cirebon Area (up to Songgom Station) and Operation V Purwokerto Area (after Songgom Station). The railways connected to this track are:

- Cikampek-Cirebon railway track
- Cirebon-Tegal railway track
- Tegal-Prupuk railway track
- Prupuk-Kroya railway track

The role of railway modes in Cirebon for passenger transportation is currently very low at about 1.71% and for goods only about 0.62%.
The waterways in North Cirebon which are mostly used for loading and unloading coal with a volume of 3.5 million tons/year is one of the heaviest tracks in Indonesia and becomes the main income for PT. PELINDO (Branch of Cirebon). The coal comes from a number of areas including Kalimantan. The unloading coal at Port Cirebon is then sent to a number of areas in West Java and Central Java for fuel needs in a number of factories, including fuel for a number of factories located in Cirebon.

The condition of effective and efficient transportation system cannot be achieved in Cirebon. Besides the highway networks that are mostly damaged extend the travel time of both passengers and goods, the transportation system in this area has not been synergic between modes either land, sea or air modes. Strategic geographical location makes this city as a trajectory of movement from Jakarta to Central Java, East Java and vice versa. The increased standard of living and economy makes the movement increase from year to year. Various potencies such as agriculture, plantations, fisheries, tourism, forest products, and some other potency require adequate transportation facilities and infrastructure. If existing transportation problems such as jam, damaged road, unoptimal ports, airports, rail roads are not immediately solved, they will hamper economic growth and regional development. Production from various potencies and economic opportunities will be hampered, such as the distribution of goods, especially fragile goods that requires to arrive on time; tourism opportunities for tourists, especially foreign tourists and the people's time value that is getting higher.

2. Purpose

This paper aims to illustrate the potential for the development of intermodal transport in Cirebon related to the efforts to accelerate economic growth and the development of the existing regions' potencies. The opportunities are aligned with the development plans and programs of local governments and agencies related to transportation and development planning in Cirebon.

3. Potency of Cirebon Area

It covers the North Sea of Java, the Northwest of Indramayu district, the South of Kuningan district, the East of Brebes-Central Java district, the Southwest of Majalengka district and surrounds the city of Cirebon that has a Great Seaport. The developments that occur to the present raise the potencies and opportunities for Cirebon to change as a Metropolitan city like Jakarta. The hotel constructions that increase vigorously, the operation of Cipali Toll, as well as the construction of Kertajati airport are factors that can change Cirebon over time. Cirebon is the second largest independent city in West Java, after the capital of West Java, Bandung. This city is located on the Coastof Java

Sea, in pantura track. Pantura track of Jakarta - Cirebon - Semarang is the heaviest route in Indonesia. Cirebon is also the fourth largest city in the Pantura regions after Jakarta, Surabaya, and Semarang.

Nowadays, strategic location and maintainable historical and culture relics make Cirebon develop and have a new face in the business world. Cirebon does not only become a transit place just like before, but also evolves into one of the cities that attract businessmen to invest. The uniqueness of this Shrimp Town is then captured by business people to pour funds and build businesses in Cirebon.

The official operation of Cipali Toll and the construction of Kertajati International Airport in Majalengkadistrict give new hope. The new hope does not only come for airline companies but also other business sectors such as tourism, lodging and culinary.

Now, the city which is also known as the city of guardian has been transformed as one of the center cities of business and Industry. The city, also known as the shrimp town, is an easy target for business people, small and medium to large industries which have been established in Cirebon. Being one of the metropolitan cities is not just a figment. The supporting infrastructure such as Toll, Port,and International Airport have been presented and developed. It is not possible that 2 to 5 years ahead, Cirebon will be a big city in West Java as well as Bandung and Jakarta.

Table 1. Resident Of Cirebon

District area	2014		
	Population By Sex (Soul)		
	Male	Female	Male and Female
Harjamukti	53.237	52.204	105.441
Lemahwungkuk	27.752	26.752	54.504
Pekalipan	14.703	15.151	29.854
Kesambi	36.325	36.118	72.443
Kejaksaan	21.345	22.312	43.657
Cirebon City	153.362	152.537	305.899

Source: Central Bureau of Statistics of Cirebon, 2014

3.1 Natural Resources

Cirebon Regency has the potencies of natural resources which includes mineral resources, class C extractive as well as abundant land resources such as agricultural land of food crops, plantation, fishery, farm and forestry. Below is the data of the potency of natural resources in Cirebon Regency.

A. Agriculture Food Crops

It includes food crops, vegetables and fruits. Food crops include grains, corn, tubers and beans. The data types of food crops are detailed according to land area, harvested area, production yield and average production per hectare. The area of rice harvest (paddy field and field) in 2002 was decreased by 5,169 ha or 5,79% compared to 2001 from 89,132 ha to 83,963 ha.

B. Plantation

The production of smallholder plantations in Cirebon district consists of coconut, clove, coffee, kenanga, sugarcane, pepper, cotton and melinjo. Sugarcane has the most plantation value of production and land area is spread almost in every district in Cirebon Regency. The harvest width of people's sugarcane in 2002 amounted to6,164 ha was decreased but increased in production.

C. Fishery

The prospect of fishery in Cirebon Regency is promising. It can be seen from the production which tends to increase from year to year. This situation is certainly supported by the location of Cirebon Regency which is located on the North Coast of Java Island. The biggest production in 2002 was obtained from sea fish which reached 40,168.5 tons, increased from the previous year's production, 39,968.7 tons, with the total production value of Rp. 184,540 million.

D. Farms

The population of large livestock (cow, horse, and buffalo) during 2002 was dominated by buffalo cattle which reached 5,326 buffalos. For small livestock species, sheep breeding was the largest population reaching 161.143 sheep which increased of 0.2% from the previous year which was recorded 160,829 tails. The most population for poultry during the year 2002 was local chicken as many as 1.756.598 chickens, followed by 354,274 ducks, and 225,000 pieces of broiler chicken.

3.2 Human Resources

- Working age population of 78.38%,
- Low HDI ranked282 out of 424 regencies/cities,
- Investment attractiveness ranked 115 out of 134 regencies/cities (KPPOD).

Population issues and problems in Metropolitan Cirebon can also be seen from the quality of the population, which is reflected in the Human Development Index (HDI). Most regencies/cities in Metropolitan Cirebon Raya have lower HDI than West Java HDIs, which are Indramayu, Cirebon Regency, Majalengka and Kuningan, while only does Cirebon City have higher HDI out of the average HDIs of West Java. It needs more attention, because HDI affects the level of competitiveness of Metropolit an Cirebon in the scope of West Java, Indonesia and International.

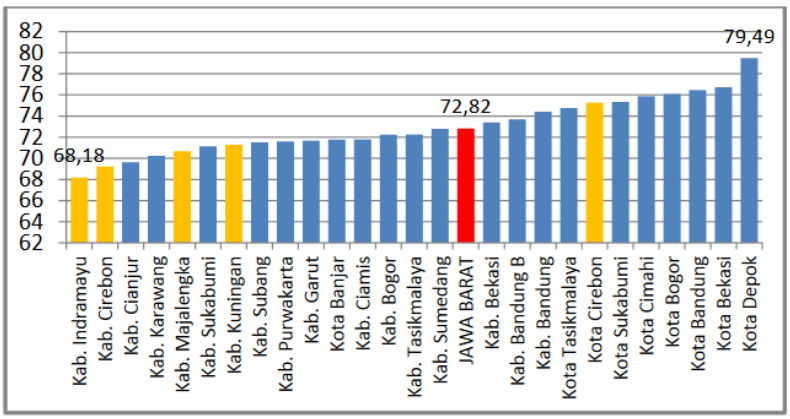

Figure 1 : Of Regencies/Cities'' Hdi In West Java In 2011
(Source: TNP2K, 2011)

a. Trading

Market activity is concentrated in Arjawinangun and Weru/Plered Districts. The activities of small and medium scale industries are mostly concentrated in Tegalwangi.

b. Industry

It includes the potency of mineral resources (Palimanan lime volcano as raw material of cement), and the existence of some big industries like rattan and cement industry.

4. The Development Plan of Road Network Area III Cirebon

Strategic road network development plan for West Java Province in general can be grouped into 2, namely: toll road and non-toll road (National and Province) network. The visualization of these plans is presented in the figure below. In the plan of PT. JasaMarga, the development of toll road network in West Java will be directed to complement and connect the inter-toll road network system throughout Java. Some of the roads through West Java include:

(1) Construction of Cikampek-Padalarang toll road segment (the initial process has been begun),
(2) Construction of Ciawi-Sukabumi-Padalarang toll road segment,
(3) Construction of Cileunyi-Sumedang-Dawuan Toll Road,
(4) Construction of Cikampek-Palimanan Toll Road,
(5) Construction of the Cileunyi-Tasik-to Central Java Toll Road, and
(6) Construction of Cikarang-Bekasi-TanjungPriok Toll Road.

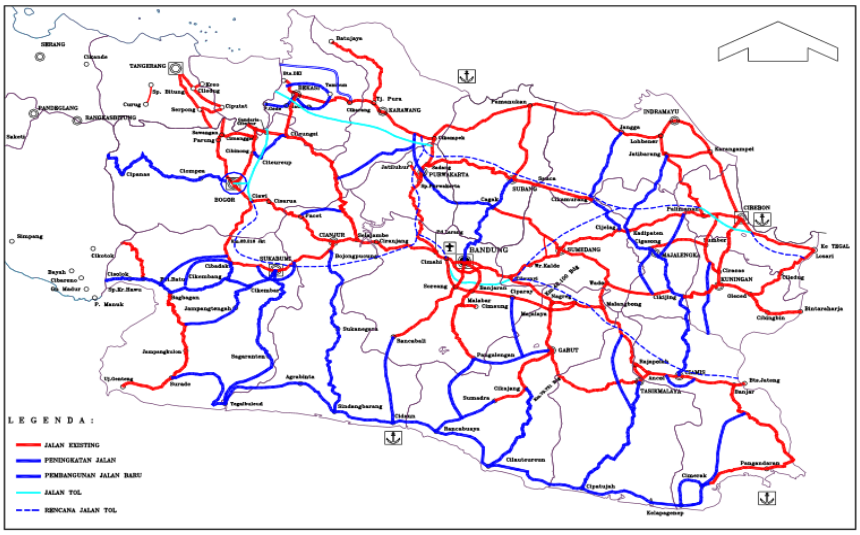

Figure 2: National And Provincial Road Network Development Plan In West Java Provincethat Passes Through Cirebon

4.1 Railway System Development

The increasing need for rail transportation makes the government, through the Directorate of National Railways; the Ministry of Transportation should add new channels. The Ministry of Transportation is targeting the construction of the new railways for about 12,100 kilometers (km) until the year of 2030.

The construction of the rail network is divided into five islands in Indonesia. They are: Java with the target of rail network construction for about 6,800 km, Sumatra 2,900 km, Kalimantan 1400 km, Sulawesi 500 km and Papua for about 500 km.

The intercity railway networks in Java are focused in supporting passenger and freight services while the intercity railway network in Sumatra, Kalimantan, Sulawesi and Papua are focused in supporting freight services. The development strategies of urban train'snetwork are fully focused on urban transport.

"The national railway is predicted to have a passenger market share of 11 to 13 percent and goods of 15 to 17 percent out of the total of national transportation market share in 2030," E.E. Mangindaan, Minister of Transportation. The construction of the national rail network is in line with Law No. 23 of 2007 on railways and Law 17 of 2004

on the ratification of the Kyoto Protocol, together with government policies to reduce pollution in March 2011.

The Development of Railway in Java

The objective of railway development in Java is to optimize the existing networks through improvement, rehabilitation, revitalization of track capacity programs through the development of double tracks and shortcuts.

The Development of network and rail service is done in some stages which include: first, the development of networks and rail services inter-cities, that includes the construction of new tracks including double track and shortcuts such as: north double track (Cirebon - Semarang - Bojonegoro - Surabaya), south double track (Cirebon - Prupuk - Purwokerto - Kroya - Kutoarjo - Solo - Madiun - Surabaya), double track of Surabaya - Jember - Banyuwangi and Bangil - Malang - Blitar - Kerosono, the construction of new track of Sidoarjo - Tulangan–Gangsir Mount, Construction of shortcut of Parungpanjang - Citayam - Nambo - Cikarang - Tanjungpriok, shortcut of Cibungur - Tanjungrasa, shortcut of Lebeng - Kalisabuk.

Second, the development of network and rail service that connects the area of natural resources or production areas to ports includes: Tanjung (DKI Jakarta), Cirebon (West Java), Tanjung Perak (East Java), TanjungEmas (Central Java), Bojonegara (Banten), the construction of Karawang - Cilamaya railway track.

The third is the development of network and High Speed Train services on the tracks: Merak - Jakarta - Cirebon - Semarang - Surabaya - Banyuwangi. Seventh, the improvement of capacity of rail network through the construction of double track and electrification includes tracks: Ouri - Tangerang, Serpong - Maja -Rangkasbitung - Merak, Manggarai - Jatinegara - Bekasi - Cikarang, Padalarang - Bandung - Cicalengka. Electrification of tracks Kutoarjo - Jogjakarta - Solo. Eighth, the revitalization of the railway tracks, includes: Sukabumi - Cianjur - Padalarang, Cicalengka - Jatinangor - Tanjungsari, Cirebon - Kadipaten, Banjar - Cijulang, Purwokerto - Wonosobo, Semarang - Demak - Juana - Rembang, Kedungjati - Ambarawa, Jombang - Babat - Tuban, Kalisat - Panarukan, Madiun - Siahung and Sidoarjo - Tulangan - Tarik. In addition, the Ministry of Transportation will also develop a pioneer rail service.

4.2 The development of Air Systems of Cirebon Region

"Kertajati International Airport is an airport under construction on the northeastern coast of West Java, Indonesia. Majalengka Airport is located in Majalengka Regency, around 90 kilometers east of Bandung ". Wikipedia.

Figure 3 : Image Of West Java International Airport Kertajati Majalengka Cirebon Regency

Kertajati International Airport or also known as West Java International Airport (BIJB) is an airport built in Majalengka Regency, West Java, Indonesia with a total area of 5000 ha, but in the initial phase it will be only used 646 ha. This airport is not the same as Karawang International Airport, which will be built after 2015 as a complement to Soekarno-Hatta International Airport. Majalengka Airport is located in Majalengka Regency, about 100 kilometers east of Bandung. The airport was built to replace HuseinSastranegara International Airport in Bandung. It also serves the area around Cirebon. The project is estimated to cost Rp 25.4 trillion. As of February 2011, they had cleared 1,800 hectares to build the airport, while 500 hectares are now ready for the airport construction process. Meanwhile, the toll road that will provide access to the airport hasbeen begun the construction work since 2011. Unfortunately, the airport Kertajati planned to operate in 2016 was retreated into 2017 and suddenly was retreated again to 2018. BIJB construction process is also based onthe law in Regional Regulation number 13 of 2010.

Because the construction of Cisumdawu Toll is not far from airport operation in 2018, Kertajati access is perfect. For a while, it can use the Cipali Toll exit Kertajati at KM 158, the distance is 3.5 kilometers to the airport.

Figure 4 : Airport Facilities Kertajati Will Be Prepared And Simulated Before It Finallystart To Operate 2018. Source:Pikiran Rakyat Bandung

4.3 The Development of Port of Cirebon

Port of Cirebon is one of the branches of PT. Pelabuhan Indonesia II (Persero) or Pelindo II located in Cirebon, West Java, Indonesia. Port of Cirebon is the gateway of West Java's economy and an alternative port for TanjungPriok Port, especially in serving inter-island trade activities.

Port of Cirebon is located in Cirebon City, the main road of the North coast of West Java, approximately 250 km from Jakarta or 130 km from Bandung. Geographically, it is located at Coordinate 6 ° 42'54 "LS, 108 ° 34'9" BT. Cirebon Port can be reached easily by road, whether from Jakarta, Central Java or Bandung. This ease supports the smooth distribution of goods to and from Cirebon Port. Port of Cirebon is supported by a pool depth of -7 m LWS. Ships that have a draft above 7 meters can be served in the area of anchor'sLego approximately 5 - 10 km offshore.

Facilities and equipment at Cirebon Port are available to serve a variety of seaport services which include:

A. Beach Radio Station;
B. Scout and snooze;
C. The wharf where the boat is mooring;
D. Warehouse, Field and Container Field;
E. Facilities and unloading equipment;
F. Clean Water for ships;
G. Land for industry, buildings and general office rooms;
H. Hospital, etc.

Readiness for loading and unloading service at port is available on mobile crane with capacity of 35 ton, Wheel Loader, Excavator, ramp door as support is also available.

Table 2. Cirebon City Pier

Description	Legth (m)	Depth (M Lws)	Capacity (ton/m2)
Muarajati I Basin			
Muarajati I	275.00	- 7.00	3.00
Muarajati III	80.00	- 7.00	3.00
Port II Basin			
Muarajati II	248.00	- 5.50	2.00
Linggarjati I	131.00	- 4.50	2.00
Pelita I *	30.00	- 4.00	1.00
Pelita II *	50.00	- 4.00	1.00
Pelita III *	30.00	- 4.00	1.00
Port I Basin			
Samadikun	67.00	- 3.50	1.00
Perniagaan I *	11.00	- 3.50	1.00
Perniagaan II *	11.00	- 3.50	1.00
Perniagaan III *	11.00	- 3.50	1.00
Perniagaan IV *	11.00	- 3.50	1.00
Suryat Sumantri I *	11.00	- 3.50	1.00
Suryat Sumantri II *	11.00	- 3.50	1.00
Suryat Sumantri III *	23.50	- 3.50	1.00
Suryat Sumantri IV *	11.00	- 3.50	1.00
Suryat Sumantri V *	11.00	- 3.50	1.00
Basin for Sailing Vessel			
Berth for Sailing Vessel	150.00	- 2.00	0.50

Available terminal at Port of Cirebon is cooperation with private parties. They are:

• Coal Terminal;
• Bulk Asphalt Terminal;
• Palm Oil Terminal;

Port of Cirebon provides water channel facilities to meet the needs of clean water for ships. The source of water comes from Cirebon Municipal PDAM, with a capacity of 20 liters per second or 72 tons per hour.

Table 3. Cirebon City Warehouse Storage Capacity

Description	Floor Width (m2)	Efective Width (m2)	Capacity (ton)
Muarajati Shed	4,000	2,400	4,800
101 Shed	1,610	966	1,932
102 Shed	1,366	820	1,640
103 Shed	346	208	416
104 Shed	1,020	612	1,224
Opened Shed for Sailig Vessel	1,200	720	1,440

PoPort of Cirebon is planned to be developed into multipurpose terminal by reclaiming the sea. Its RIP has been submitted to the Ministry of Transportation. After the cancellation of the Cimalaya Port construction plan by President Joko Widodo, the port operator of PT Pelindo II immediately moves to revitalize the Port of Cirebon which is projected to replace the role of Cimalaya Port.

5. The Connectivity Of Intermodal Transportation Networks

The increase of economic growth requires efficient, effective and integrated transportation so that local products or potencies can be distributed and facilitated to regional, national and international markets. This connectivity is illustrated in the transportation infrastructure in the form of segments of roads, railways, and transportation nodes such as terminals, railway stations, wharves or ports and airports.

6. Conclusions and Suggestions

6.1. Conclusions

The market share of transportation in Indonesia is currently dominated by roads with 84.13% of passenger transportation and 90.34% of freight transport per year. The share of sea freight is still very low at 1.76% per year for passenger transportation although for freight transport is relatively larger with 7% per year. Ideally, the share of intermodal must be balanced so that externality intermodal in the form of high-cost economy due to jam and road damage can be minimized.

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Railway Development is an anticipation of the metropolitan Cirebon development plan. The urban railway development plan is to reduce road traffic burden and to support the creation of effective and efficient mass transportation modes and to create new growth centers in Cirebon Regencies/Cities.

6.2 Suggestions

a) Assessment and preparation of development planning policy of Infrastructure Network of integrated land, sea, air and river transportation in Region III Cirebon have to be implemented, including in city and regency environment;
b) Cooperation with third parties and other parties in development planning and budgeting of Infrastructure network of Integrated land, sea, air and river transportation is needed;

c) In determining the location of transshipment, the government needs to look for alternative approaches such as spatial approach so that regional, national and business interests can be bridged.
d) The financing of the intermodal transportation system requires creative financing so that various intermodal transportation development initiatives can be implemented.

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